

Notice of Allowability

Application No.

09/744,113

Examiner

Sow-Fun Hon

Applicant(s)

NELLES ET AL.

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Interview dated 08/02/2005.
2. ☒ The allowed claim(s) is/are 74-93 and 95-97.
3. ☐ The drawings filed on _____ are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 08022005.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>08/02/05</u> |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with William Frommer on August 2nd, 2005.

The application has been amended as follows:

2. Replace claim 74 with - -

A substrate structure for biological neurite outgrowth, with the capability of undergoing many cycles of switching, comprising: a) a basic substrate and b) an alignment layer on said basic substrate, with a mono- or multi-layer of liquid crystal material on said alignment layer, or a combined alignment layer on said basic substrate, wherein said combined alignment layer includes a liquid crystal, and said combined alignment layer further comprises polymeric material selected from the group consisting of polyester, polypeptide, polyacrylamide, polyvinylalcohol, polyacrylate, polymethacrylate, polyurea and polyamide, or at least one type of azosilane; wherein said substrate structure for biological neurite outgrowth has at least one biological neuron on top of said mono- or multi-layer of liquid crystal material, or on top of said combined alignment layer which includes a liquid crystal; and wherein the orientation of the alignment layer or the combined alignment layer, and thereby the

direction of biological neurite outgrowth, is controllable and changeable during the growth process of the biological neuron. - -

3. In the specification, page 1, below the title "Method for providing a substrate ...", insert header - - Background of the Invention - -

4. In the specification, page 1, Insert as Line 1 - - This application is a 371 of PCT/EP00/04517 filed May 18, 2000. - -

5. In the specification, page 3, above the fourth paragraph of "It is therefore an object of the present invention to provide a substrate structure enabling a ...", insert header - - Summary of the Invention - -

6. In the specification, page 3, delete the last paragraph of "This object is solved by a method according to claim 1, a substrate structure according to claim 30 and a device for monitoring cell or neuron activity according to claim 52 and by a".

7. In the specification, page 4, delete first paragraph " use according to claims 72 and 73. Claims 2 to 29, 31 to 51 and 53 to 71 show advantageous features or embodiments of the inventive method, substrate structure or device."

8. In the specification, page 4, above the fourth paragraph "With the present invention, a self assembly preparation of oriented surfaces will be allowed ...", insert header - - Detailed Description of the Invention - -

9. In the specification, page 15, above the fourth paragraph "Fig. 1 schematically ...", insert header - - Brief Description of Drawings - -

10. Above the seventh paragraph "Fig. 1 shows the structure of an embodiment of the inventive substrate 5 ...", insert header - - Detailed Description of Drawings - -

11. The following changes to the drawings have been approved by the examiner and agreed upon by applicant: Clean copies with no smudges should be resubmitted. In order to avoid abandonment of the application, applicant must make these above agreed upon drawing changes.

The following is an examiner's statement of reasons for allowance: the closest prior art of record US 5,510,628, fails to teach or suggest, even with US 5,686,549 and US 6,061,113, the combination of a substrate structure for biological neurite outgrowth, with the capability of undergoing many cycles of switching, comprising: a) a basic substrate and b) an alignment layer on said basic substrate, with a mono- or multi-layer of liquid crystal material on said alignment layer, or a combined alignment layer on said basic substrate, wherein said combined alignment layer includes a liquid crystal, and said combined alignment layer further comprises polymeric material selected from the group consisting of polyester, polypeptide, polyacrylamide, polyvinylalcohol, polyacrylate, polymethacrylate, polyurea and polyamide, or at least one type of azosilane; wherein said substrate structure for biological neurite outgrowth has at least one biological neuron on top of said mono- or multi-layer of liquid crystal material, or on top of said combined alignment layer which includes a liquid crystal; and wherein the orientation of the alignment layer or the combined alignment layer, and thereby the direction of biological neurite outgrowth, is controllable and changeable during the growth process of the biological neuron. None of the references teaches a biological neuron on top of liquid crystal material aligned by an alignment layer, or on top of a combined alignment layer which includes a liquid crystal, wherein the orientation of the

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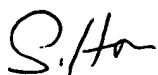
alignment layer or combined alignment layer is changed to control the direction of neurite outgrowth during the growth process of the biological neuron. See Applicant's arguments dated 06/30/05.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sow-Fun Hon

08/08/05



HAROLD PYON
SUPERVISORY PATENT EXAMINER

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8/8/05